Chlamydia screening — Australia should strive to achieve what others have not

Jane S Hocking, Jennifer Walker, David Regan, Marcus Y Chen and Christopher K Fairley

ABSTRACT

- Chlamydia screening programs overseas have failed to reduce chlamydia prevalence despite screening 20%–30% of young sexually active women.
- The Australian federal government announced in 2005 that it would provide $12.5 million for chlamydia control. Policymakers must look to chlamydia screening programs in other countries to learn from their experience.
- Australia has an excellent primary health care system and a strong track record in establishing highly successful public health programs. This experience places it in a strong position to design and implement an innovative chlamydia screening program to reduce chlamydia prevalence.

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Chlamydia trachomatis is the most commonly diagnosed bacterial sexually transmissible infection (STI) in Australia. Notification rates have risen dramatically, from 47.4 per 100 000 population in 1997 to 203 per 100 000 in 2005.[1] Chlamydial infection causes significant morbidity, particularly in women: up to two-thirds of tubal factor infertility and a third of ectopic pregnancy may be attributable to chlamydia.[2] As over 80% of infections in men and women are asymptomatic, screening is the only way to detect cases and reduce the duration of infection and the risk of complications.[2,3] Non-invasive testing (using urine samples)[4] and single-dose treatment with azithromycin[5] now make widespread chlamydia testing feasible.

In its first National Sexually Transmissible Infections Strategy released in 2005,[6] the federal government stated that a chlamydia screening pilot program targeting sexually active young people under 25 years of age should be a priority action. It announced in the same year that it would provide $12.5 million over 4 years for increased chlamydia awareness, improved surveillance and a pilot chlamydia testing program.[7] It subsequently committed $3.5 million to chlamydia prevention projects targeting high-risk groups[8] and called for tenders for the design, modelling and evaluation of a chlamydia pilot program in general practice.[9]

The experience of other developed countries may provide some valuable guidance on how an Australian chlamydia pilot program could be designed.

Chlamydia screening in other countries

Opportunistic screening was introduced in Sweden[10] and parts of the United States in the 1980s.[11] These programs principally targeted young women when they presented to family planning and STI clinics in the US and a variety of health care settings in Sweden.

In Sweden, after opportunistic screening was introduced, the prevalence of chlamydia among those tested (chlamydia positivity) declined by nearly 70% in women and 61% in men between 1985 and 1993.[12] Over a similar period, chlamydia positivity fell by 29%–41% in US women.[11]

However, since the mid-1990s, this downward trend has reversed, with chlamydia positivity increasing both in Sweden[13] and the US[14] (Box 1). A similar trend occurred in Denmark, which has had widespread chlamydia testing since the early 1990s although it has no official chlamydia screening program.[15]

Impact of screening on chlamydia-related morbidity

While opportunistic screening has not led to a sustained reduction in chlamydia prevalence in Sweden, Denmark and the US, there is evidence that chlamydia screening can reduce the incidence of complications associated with chlamydia. Two randomised controlled trials (RCTs) have investigated the impact of chlamydia screening on the incidence of pelvic inflammatory disease (PID) among women in a health maintenance organisation in the US[16] and among high school students in Denmark.[17] Both studies demonstrated about 50% lower PID incidence among those screened. Although potential biases in the study design reduce the validity of these RCT results,[18] the data are supported by ecological analyses showing falling hospital admission rates for PID and ectopic pregnancy after chlamydia diagnosis rates fell in Sweden.[19]

Contribution of mathematical models

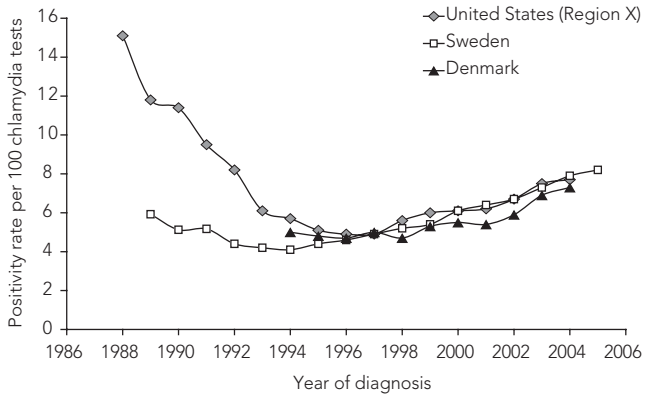
Mathematical modelling studies of the impact of screening on chlamydia prevalence have predicted that chlamydia prevalence should fall if women aged 15–24 years are screened annually, and that screening men as well will lead to a faster and greater reduction in overall prevalence.[20,21] Thus, it is unclear why there has been an increase in chlamydia prevalence, despite the screening of 25%–30% of 15–24-year-old women in Sweden each year since 1985.[22] The increased use of more sensitive tests only partially explains the increased rates.[22] Failure to target men as well as women for screening may be another contributing factor:[18] only about 25% of tests conducted in Sweden annually are for men,[13] yet chlamydia positivity among young men is more than double that among women of the same age.[22]

Changes in sexual behaviour

Another possible explanation for the fall and then rise in chlamydia prevalence is that sexual behaviour may have changed. If this were the case, we might expect to see a similar pattern in gonorrhoea diagnoses — and, indeed, the number of gonorrhoea diagnoses did reach a low point in Sweden and Denmark in 1996–1997, with subsequent considerable rises (Box 2). The fall in gonorrhoea incidence in the late 1980s coincided with reduced sexual risk behaviour in response to HIV/AIDS awareness and prevention campaigns, and the subsequent increase in gonorrhoea diagnoses in the late 1990s has been attributed, in part, to increased sexual risk behaviour.[23]

The National Survey of Sexual Attitudes and Lifestyles, a sexual behaviour survey conducted in the United Kingdom in 1990 and again in 2000,[24] showed significant increases in sexual risk behaviour between the two surveys, with the number of heterosexual partners in the preceding 5 years increasing significantly for both sexes. Australian data show that age at first sexual intercourse has fallen, with

1 Chlamydia positivity rate per 100 tests performed, by year and country[11-13]



women aged 16–24 years reporting a median age of 16 at first sexual intercourse compared with 19 for women aged 50–59 years.[25] None of the published mathematical models assessing chlamydia screening has taken altered patterns of sexual behaviour into account.[20,21] This may help to explain why these models predict a sustained fall in chlamydia prevalence after 10 years' screening, whereas the results of overseas screening programs in fact show the opposite.

Chlamydia screening in Australia

In Australia, we are fortunate to have one of the most accessible and highest quality primary health care systems in the world. The federal government proposes to pilot chlamydia screening in general practice, and, as nearly 90% of women and 70% of men aged 15–24 see a general practitioner at least once a year (Health Insurance Commission, unpublished 2004 data) general practice would provide an excellent opportunity to reach the vast majority of the target population. However, if an Australian chlamydia screening program is to achieve a sustained reduction in prevalence, it must be different from overseas programs. In particular, we should evaluate different options for inducing GPs to conduct screening and for encouraging young men and women to accept screening.

There are several options that could be investigated. Firstly, we could look to the success of the National Cervical Screening Program in Australia for guidance. Pap smear testing was initially offered opportunistically to women when they visited their GP. This was replaced by an organised national cervical screening program after it became clear that opportunistic screening was having limited impact on cervical cancer incidence.[26] This included the creation of Pap test registers that coordinated a system of recall to women. This program has been an outstanding success, and Australia now has the lowest cervical cancer mortality rate in the developed world.[27] It is possible that a centralised register recalling people to be screened at regular intervals would be an effective component of a chlamydia screening program. As chlamydia is an STI, young adults might be reluctant to have their details recorded on a chlamydia register. However, as chlamydia, unlike cervical cancer, is not life-threatening, it is possible that a chlamydia register could be used simply to remind people that their test was due rather than record test results. Further research should investigate the acceptability and effectiveness of a chlamydia register to recall people for regular testing. In this issue of the Journal, Bowden and colleagues (*page 76*)[28] report some success with screening for chlamydia at the time of carrying out routine Pap smears.

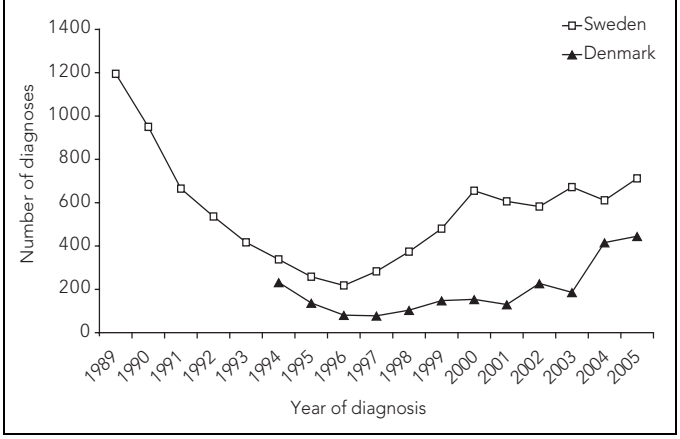
Secondly, we can learn from the success Australia has had in increasing immunisation rates. The General Practice Immunisation Incentives Scheme[29] provides incentives to GPs to increase childhood immunisation rates in Australia. Since its introduction in 1998, immunisation rates have increased from 73% in 1998 to 90% in 2003.[30] Similar incentive schemes have been established to improve the management of diabetes and asthma by GPs.[31] It could be argued that immunising children or managing diabetes is very different from recommending an STI test, and that the reality that many young adults attend a GP with a parent or guardian makes it potentially difficult to raise the subject of chlamydia testing. Nevertheless, as the vast majority of young adults visit a GP each year, consideration could be given to the possibility of incentive payments to GPs to increase chlamydia screening.

Australian general practice has achieved near universal computerisation in the past 10 years and many practices have set up systems in their clinical software to recall patients for routine tests.[32] There are no readily available data showing whether this has had an impact on patient health, but the possibility of using clinical software to allow GPs to set up a system of chlamydia test recall in their practice could be further investigated.

Other possible options include chlamydia screening outside a general practice setting — for example, school-based,[17] sports club-based[33] and/or postal-based[34,35] testing. Such programs may be more effective in reaching young adults, who may not attend a GP or who may not have a Medicare card. While sports club-based testing has been shown to be highly acceptable to young adults, school-based and postal-based testing have suffered from low participation rates when investigated, and postal testing programs have tended to attract better educated people in older age groups.[34] The federal government, in common with many overseas screening programs, is currently focusing on chlamydia screening within general practice, but it may need to consider other options if general practice-based programs fail.

Any of these options to increase screening will need to be included as part of a more organised chlamydia screening program that includes chlamydia education and health promotion. Such a program will incur considerable health care costs to the government. While successes have been achieved with cervical screening and immunisation programs, we do not know whether a program applying similar methods to chlamydia control will be effective in increasing chlamydia screening and ultimately lead to lower chlamydia prevalence and morbidity. The question of which chlamydia screening method is

2 Gonorrhoea diagnoses, by year and country[11-13]



likely to achieve the most sustained control of transmission can only be answered through RCTs. We are in a unique position in Australia to be able to learn from overseas experience and use robust epidemiological methods to evaluate different screening strategies to determine the most effective approach for Australia.

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Competing interests

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